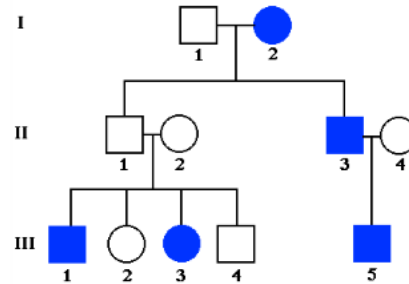


Biology 12: Genetics Quiz**Part A: Multiple Choice (5 marks)**

1. The phenotypes of a homozygous black mouse and a heterozygous black mouse are
 - (a) gray and black
 - (b) BB and BB
 - (c) black and black
 - (d) BB and Bb
2. If an individual has the genotype Pp for a particular characteristic what type of gametes could he produce?
 - (a) 50% Pp and 50% Pp
 - (b) 50% P and 25% p
 - (c) 50% P and 50% p
 - (d) 50% p and 50% p
3. In a fruit fly black body (B) is dominant over brown bodies (b). If two black flies were mated and produced 152 black and 43 brown flies the parents genotypes would most probably have been?
 - (a) $BB \times BB$
 - (b) $BB \times Bb$
 - (c) $Bb \times Bb$
 - (d) $Bb \times bb$
4. In peas yellow seed is dominant to green seed and round seed is dominant to wrinkled seed. If the letter symbols Yy correspond to the alleles for seed colour and Rr correspond to the alleles for seed shape, what type of gamete could be produced by a homozygous yellow and wrinkled seeded plant?
 - (a) YR
 - (b) Yr
 - (c) yR
 - (d) yr
5. Human height is an example of which of the following traits?
 - (a) recessive
 - (b) polygenic
 - (c) epistatic
 - (d) sex-linked

Part B: Problem Solving

1. For the following pedigree, indicate whether the trait represented by the dark symbols is dominant or recessive. **(1 mark)**



2. In the pedigree above, if the allele responsible for the trait (p) is recessive to the normal allele (P), **(2 marks)**
- What is the genotype of the father in the 1st generation?
 - What is the genotype of individual #2 in the 2nd generation?
3. If ' B ' represents brown eyes and ' b ' represents blue eyes, determine the genotypes and phenotypes of the offspring produced in the following crosses using a Punnett square: **(4 marks)**
- A blue eyed individual and a homozygous brown eyed individual.
 - Two heterozygous brown-eyed individuals.
4. When pure breeding black Andalusian chickens (BB) are crossed with pure breeding white Andalusian chickens (WW) the first generation offspring are all grey in colour (known as 'blue' Andalusians). Using a punnet square, determine the genotypes and phenotypes of the offspring when two of these 'blue' Andalusians are mated. **(4 marks)**

4. In pea plants: tall (T) is dominant over dwarf (t), and yellow seeds (Y) are dominant over green (y). Using a Punnett square, represent a cross between a heterozygous tall, heterozygous yellow plant and a dwarf heterozygous yellow plant and state the phenotypes of the offspring. **(4 marks)**
5. When pure breeding black Andalusian chickens (BB) are crossed with pure breeding white Andalusian chickens (WW) the first generation offspring are all grey in colour (known as 'blue' Andalusians). Using a Punnett square, determine the genotypes and phenotypes of the offspring when two of these 'blue' Andalusians are mated. **(4 marks)**